


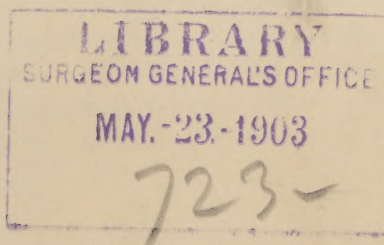
THORNDIKE (A.)

THE TREATMENT OF CLUB-FOOT.

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THE TREATMENT OF CLUB-FOOT.

THE limits of this paper compel me to speak only of the treatment of Congenital Equino-Varus. All cases vary from the therapeutic stand-point in two ways : in the amount of *distortion*, slight, moderate or severe ; and the amount of *resistance* offered to manual replacement.

Either age or a relapse after the deformity has once been corrected are adverse factors, and modify not only the prognosis but lead to the selection of a more radical method of treatment. For instance, a child of fifteen, with moderate equino-varus, may, with suitable apparatus, bring the foot into a correct position, and after retaining it there by an appliance for a year abandon the apparatus and be cured permanently. On the other hand, a child of the same age who has been straightened and relapsed presents a more resistant foot and much greater difficulties to the orthopedist, and will usually require open incision or even osteotomy. It is, therefore, not surprising to find a number of different procedures advocated. Every case, whether operative or not, requires mechanical treatment for a considerable time, — six to eighteen months after the deformity has been entirely corrected—to prevent relapse. A partial correction of club-foot is useless, for relapse will surely follow.

The mildest form of correction consists in manual replacement two or three times a day by the parent, bandaging with a soft flannel bandage between whiles. This is obviously useful only in the mildest cases and in very young babies.

With adhesive plaster the foot may be kept corrected a little more firmly, but in most babies a firm retentive apparatus is necessary; either a light plaster bandage applied holding the foot corrected as far as can be comfortably borne until the plaster has set, or else a light tin shoe in which the foot is strapped with adhesive plaster or bandage. The importance cannot be overestimated of beginning treatment at once in very young infants, for their feet are less resistant the younger they are.

Another useful apparatus consists of a light wire upright having a spur of fairly stiff wire towards which the foot may be drawn by the turns of the bandage. But the form of appliance now most commonly used for babies at the Children's Hospital consists of the Taylor club-foot shoe, slightly modified, and applied with an adhesive plaster extension strap to keep the heel down, the upright being continued to the waist where a long posterior arm serves to evert the foot. The shoe is first applied to the sole of the foot, irrespective of the position of the upright, and is firmly fastened by adhesive plaster and bandage; the foot is then brought into correct position by pushing the upright into place, where it is held by the strap and bandage. These shoes are worn two or three weeks continuously and reapplied many times. By bending the upright the foot can be over-corrected after several applications. This apparatus is also useful after operation.

Another modification of the Taylor club-foot shoe, recently devised by Dr. E. H. Bradford, is for older and more resistant cases. The object of this apparatus is to secure a firm grasp of the os calcis and astragalus before applying any force to correct the inward and downward displacement of the anterior part of the tarsus. It consists of a Y strap so applied that the tail of the Y passes under the sole of the foot from without inwards, while the two branches pass, one around the heel securing the rear part of the calcaneum,

and the other over the outer side of the neck of the astragalus. In this way a very firm grasp of the os calcis is first obtained and the correction effected by bringing the upright against the leg as in the ordinary Taylor club-foot shoe.

The more resistant forms of club-foot require operation and prolonged mechanical after-treatment.

Operations may be divided into three groups : —

1. Tenotomies.
2. Incisions.
3. Operations on the bones. Osteotomies and excisions.

TENOTOMIES.

In the severe infantile cases tenotomy aided by a moderate amount of force applied with the hand is sufficient. In the older and more resistant feet, where greater force is needed, the Thomas wrench or the lever of Bradford is used after tenotomy to obtain correction. The principle of these instruments is simple and effective. Tenotomy for club-foot at the Children's or the Good Samaritan Hospitals is usually done upon the following simple rule : "to divide any and all bands which can be felt tense when the foot is held as nearly straight as possible, taking care to avoid the arteries and nerves." The following structures are sometimes divided : the plantar fascia, tendo Achillis, tibialis anticus, tibialis posticus and abductor pollicis muscles, and the anterior portion of the deltoid ligament, part of the astragalo-scaphoid ligament or of the calcaneo-scaphoid ligament. Most operators prefer not to divide the tendo Achillis until the varus position has been entirely corrected, and sometimes this is left for a subsequent operation.

If the deformity cannot be completely eradicated by tenotomy it is better to do an open section *à la Phelps* at once ; for partial correction means relapse. After tenotomy and replacement with the lever a small sterile gauze

dressing is applied, and a plaster bandage from the tips of the toes to half way up the thigh, the knee being partly flexed, otherwise the bandage will twist and allow the toes to point in. When the plaster is removed a retentive apparatus, generally one of the modified Taylor club-foot shoes, is applied and constantly worn till all danger of relapse is over, *i.e.*, one or more years.

OPEN INCISION.

The method of Phelps has become of late the favorite method of treating resistant cases. An incision is made from the centre of the sole to a point a finger's breadth in front of the internal malleolus, and is carried successively through all resisting soft parts to the bone if necessary, until the foot can be brought into an over-corrected position and stay so. The incision is then covered with a strip of sterile gutta percha tissue, and a sterilized gauze dressing applied with plaster bandage, allowing the wound to fill and heal by blood clot.

The operation may be rendered bloodless by the Esmarch bandage. The dressing if sterile may remain a month. The retention shoe may be applied with dressings before the wound is healed. After-treatment must be long continued, as relapses sometimes occur.

BONE OPERATIONS. OSTEOTOMIES — EXCISION OF ASTRAGALUS.

Bone operations involve mutilation of the skeleton of the foot and are done only when the operator fails to correct by the Phelps method. It should be done at the time of the other operation, and, usually, a linear osteotomy of the neck of the astragalus or of the anterior part of the calcaneum will enable the over-correct position to be reached.

Wedge-shaped exsection of the tarsus involves too great mutilation and is seldom called for, even in the most resistant of adult cases.

Excision of the astragalus is seldom done at the Children's or Good Samaritan Hospitals, and I have yet to see any club-foot I would amputate. All club-feet are curable either by mechanical means alone, or by a simple operation followed by mechanical treatment. Failures are due primarily to insufficient after-care, either because the mechanical treatment is not kept up long enough, or some important detail is neglected.

